



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,509	10/31/2003	Dhruva Ranjan Chakrabarti	200314557-1	9606

22879 7590 09/10/2007

HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER
----------

CHOU, ANDREW Y

ART UNIT	PAPER NUMBER
----------	--------------

2192

MAIL DATE	DELIVERY MODE
-----------	---------------

09/10/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/698,509

Applicant(s)

CHAKRABARTI ET AL.

Examiner

Andrew Y. Chou

Art Unit

2192

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06/19/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1, 7, and 13 have been amended. Claims 1-13 remain pending.

#### **Continued Examination under 37 CFR 1.114**

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFE 1.114. Applicant's submission filed on 06/19/2007 has been submitted.

Applicant's arguments are considered but are moot in view of new ground of rejection made from art of record. Kaser (IDS filed on 10/31/2003).

new ground of rejection art, Kaser, of record below.

#### ***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 7-12 are rejected under 35 U.S.C 101 because claim limitations are directed towards software per se. The claimed invention is directed to non-statutory subject matter. Apparatus claims fail to recite any hardware features required enabling

Art Unit: 2192

the functionality. Thus, claims 7-12 are rejected under 35 U.S.C 101 as being computer listings per se. See MPEP 2106.01(I).

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-13 are rejected under 35 U.S.C 102(b) as being anticipated by Kaser et al. ("Evaluating Inlining Techniques", 1996, ACM, hereinafter "Kaser").

**Claim 1:**

Kaser discloses a method of compiling a computer program with inline specialization, the method comprising:

given a call-graph (see for example page 2, "Call Graph") if multiple call-chains in the call-graph have a common call site, inlining the common call site in one or more of the call-chains, without inlining the common call site into all of said multiple call-chains having the common call site (see for example page 10, "Specialization to cv-inlining").

**Claim 2:**

Kaser further discloses the method of claim 1, further comprising: whenever a call site from routine x to routine y is inlined, new edges are added from routine x to all routines inlinable within routine y (see for example pages 6-8, "4 A Multi-version Inlining

Art Unit: 2192

Technique”).

**Claim 3:**

Kaser further discloses the method of claim 2, further comprising:

materialization of summary information for new call sites added to the call-graph (see for example pages 6-8, “4 A Multi-version Inlining Technique”).

**Claim 4:**

Kaser further discloses the method of claim 3, further comprising:

addition of the new call sites to the global work-list so that these call sites are considered for inlining (see for example Figure 1, and related text).

**Claim 5:**

Kaser further discloses the method claim 4, further comprising:

addition of dependence relationships between call sites. If a new call site, y, is added because of inlining of call site, x, then y is dependent on x (see for example pages 6-8, “4 A Multi-version Inlining Technique”).

**Claim 6:**

Kaser further discloses the method of claim 5, further comprising:

patching of the new call site, y, during inline transformation of call site, x, with the aim of generating the intermediate transformation for call site, y (see for example pages 6-8, “4 A Multi-version Inlining Technique”).

**Claim 7:**

Kaser discloses an apparatus for compiling a computer program with inline specialization, the apparatus comprising:

Art Unit: 2192

means to inline a common call site in one or more of the call-chains in a call-graph, without necessarily inlining the common call site into all call-chains having the common call site (page 10, "Specialization to cv-inlining).

**Claim 8:**

Kaser further discloses the apparatus of claim 7, wherein whenever a call site from routine x to routine y is inlined, new edges are added from routine x to all routines inlinable within routine y (see for example pages 6-8, "4 A Multi-version Inlining Technique").

**Claim 9:**

Kaser further discloses the apparatus of claim 8, wherein materialization of summary information for new call sites added to the call-graph is performed (see for example pages 6-8, "4 A Multi-version Inlining Technique").

**Claim 10:**

Kaser further discloses the apparatus of claim 9, wherein the new call sites are added to the global work-list so that these are considered for inlining (see for example Figure 1, and related text).

**Claim 11:**

Kaser further discloses the apparatus of claim 10, wherein dependence relationships are created between call sites (see for example pages 6-8, "4 A Multi-version Inlining Technique").

**Claim 12:**

Kaser further discloses the apparatus of claim 11, wherein the inline transformation

Art Unit: 2192

patches up the intermediate representation of the new call sites (by considering the dependence relationships) before potentially inlining them see for example pages 6-8, "4 A Multi-version Inlining Technique").

**Claim 13:**

Kaser discloses a computer program product comprising a computer-usable medium having computer-readable code embodied therein, the computer program product being a source code compiler with cross-module optimization (see for example Figure 1, and related text), the compiler including and inline specialization feature such that given a call-graph, if multiple call-chains in the call-graph have a common call site, the common call site is inlined in one or more of the call-chains graph, without necessarily being inlined into all of the multiple call-chains having the common call site (see for example page 10, "Specialization to cv-inlining).

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Y. Chou whose telephone number is (571) 272-6829. The examiner can normally be reached on Monday-Friday, 8:00 am – 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam, can be reached on (571) 272-3695.


Art Unit: 2192

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is (571) 272 2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

AYC



TUAN DAM  
SUPERVISORY PATENT EXAMINER